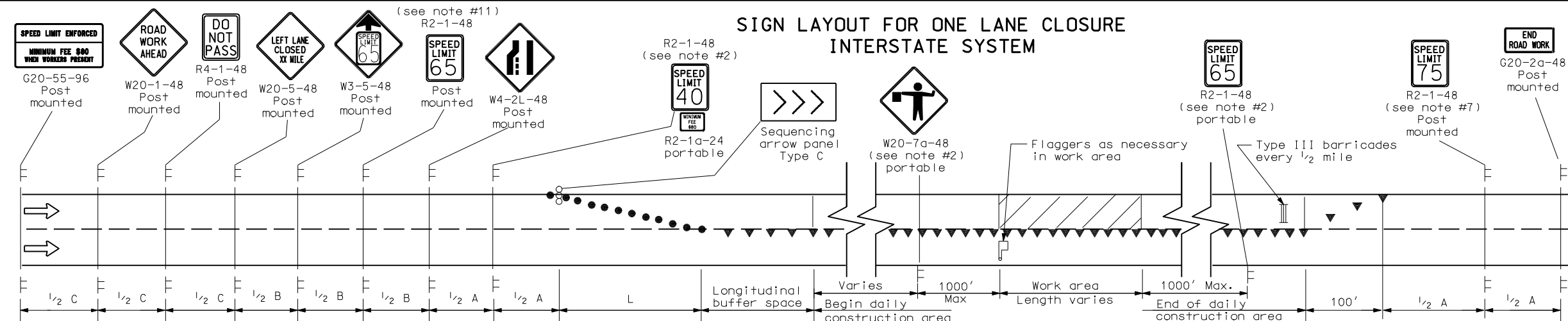
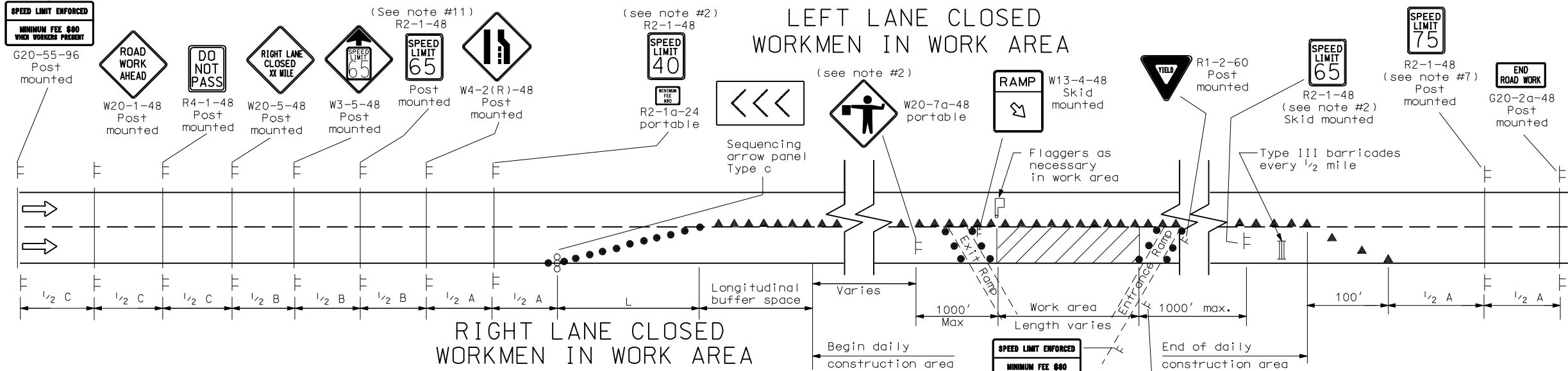


SIGN LAYOUT FOR ONE LANE CLOSURE
INTERSTATE SYSTEMLEFT LANE CLOSED
WORKMEN IN WORK AREARIGHT LANE CLOSED
WORKMEN IN WORK AREA

This layout is used for work longer than 15 days.

Longitudinal Buffer Space	
*Speed (mph)	Length Min (feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

* Posted speed, off-peak 85th percentile speed prior to work starting, or the anticipated operating speed in mph.

Notes

- Advance signs for flagging should be installed when flaggers are flagging.
- The advanced flagger sign and the speed limit signs shall be moved as the work area moves thru the construction zone. When the work area is not visible from the flagger, the flagger station shall be placed so the work area is visible. The 55 mph speed limit and 40 mph speed limit signs shall be spaced at $\frac{1}{2}$ A between signs in advance of the flagger sign. The 65 mph speed limit sign shall also be moved. Upon completion of the work day or when workers are not present, the 55 mph speed limit, 40 mph speed limit and the Minimum Fee \$80 signs shall be covered or removed.
- RAMPS: When the work area encompasses a ramp, the ramp shall be controlled by installing a 40 mph speed limit sign and covering any existing yield sign. Install new yield sign as necessary. When the main line 40 mph speed zone is moved past the ramp, the ramp speed limit sign shall be removed.
- Variables
S = Numerical value of speed limit or 85th percentile.
W = The width of the taper.
L = Minimum length of taper, or $S \times W$ for freeways, expressways, and all other roads with speeds of 45 mph or greater, or $W \times S^2/60$ for urban, residential, and other streets with speeds of 40 mph or less.
- Delineator drums used for tapering traffic shall be spaced at dimension "S". Tubular markers used for tangents shall be spaced at 2 times "S".
- Sequencing Arrow Panels
Panels should normally be placed at the beginning of the taper. Where shoulder width does not provide sufficient room, the panel should be moved closer to the work area so that it can be placed on the roadway surface.
Type A shall be used on roadways with slow moving traffic speeds and low volume (25 mph and 750 ADT or less).
Type B shall be used on roadways with moderate traffic speeds and volumes (40 mph and 5000 ADT or less).
Type C shall be used on roadways with high traffic speeds and volumes (over 40 mph and 5000 ADT).
- The speed limit shall be re-established. The exact speed limit shall be determined in the field, dependent on location and conditions.
- Existing speed limit signs within a reduced speed zone shall be covered.
- Obliterated or covered pavement marking shall be paid for as Obliteration of Pavement Marking. The covering shall be approved by the Engineer.
- When warning signs are used in urban areas and the signs are not portable, flags shall be installed. The flags shall be 24 inches square, mounted perpendicular to the edges of the diamond sign, and at such a distance above the edge so that when the flag is limp it will not touch the sign. Rural areas will not require flags.

- The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 mph below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 mph. In this case, the speed limit reduction shall not exceed 30 mph. Where speed limits are to be reduced more than 30 mph, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 mph. The second speed limit sign shall be placed at $\frac{1}{2}$ B.
- The contractor has the option of using portable sign supports in lieu of post mounted sign as shown on the standard drawings as specified in section 704.03 C.

ADVANCE WARNING SIGN SPACING

Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

KEY	
	Type I barricade
	Type II barricade
	Type III barricade
	Sign
	Delineator drum
	Tubular markers
	Work area
	Flagger
	Sequencing arrow panel
	Type A delineator or vertical panels back to back

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
08-01-92	
REVISIONS	
DATE	CHANGE
07-25-03	Revised R2-1, R2-1a, and W20-1
04-01-04	Rev G20-55-96 sign & warning & buffer spacing
09-21-04	Minor revision
12-01-04	PE Stamp added
06-29-05	Revised W4-2, Replaced R2-5a with W3-5, Revised Adv. Warning Table, Rev. Note 11
04-05-06	The speed limit 55 sign removed

This document was originally issued and sealed by MARK S. GAYDOS, Registration Number PE-4518, on 04/05/06 and the original document is stored at the North Dakota Department of Transportation